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CHLORINATED ALKALIES AS A TEST FOR MORPHIA AND OTHER PROXIMATE PRINCIPLES.

By Henry S. Wellcome, G. P.

While making a series of experiments on the alkaloids, I found that chlorinated lime gave a red color with morphia, and at that time was not aware that the reaction had ever before come to notice, as none of our text-books in chemistry make any mention of it. I have since found a very brief note in *Gmelin's Chemistry*, Cav. edit., Vol. xvi, p. 425. "Aqueous chlorinated lime gives a dark orange color with morphia (Duflos). Chlorine gives a yellow color with morphia, and is changed to dark brown by ammonia (Braconnot)." By referring to the files of some of the pharmaceutical journals, I find that the reaction of chlorine and chlorinated lime has several times been announced as a new test,* but seems to have never been fully investigated. Having become interested in it, I have continued my investigations, and have become convinced that it deserves more attention than it has received.

It is extremely delicate and very characteristic. Solution of chlorinated soda and other alkaline solutions of chlorine give the same reaction. As a reagent, the following solution has been found very convenient; it is made by adding two ounces of fresh chlorinated lime to a pint of water, and, after standing a few hours, decanting the clear solution.

Morphia, in powder, gives a deep red color with a drop of this solution.

With a solution of one grain of morphia in one thousand grains of water, it gives a bright red color; and a drop of the mixture evapo-

*Compare American Journal of Pharmacy, vol. viii, p. 213; vol. x, p. 168; vol. xxviii, p. 9.

rated on a porcelain plate leaves a deep red ring. On the addition of ammonia, or any other strong alkali, the solution becomes dark-brown.

It gives a distinct orange color in solution of one grain of morphia in five thousand of water, and with care may be made to show plainly in solution of one grain in ten thousand. Excess of the chlorine decolorizes these solutions, and the orange color cannot be restored. Excess of an acid decolorizes them, but the color reappears on adding excess of an alkali. These reactions are the same in the presence of all other alkaloids with which I have experimented.

When a few drops of chlorine water are added to morphia in powder, and, after solution, a drop or two of ammonia, beautiful red star-like spangles will form. This test is best performed on a porcelain plate or crucible cover.

Alkaline solution of chlorine also gives a red color with phloridzin, either in powder or solution, and this is decolorized by excess and by acids, and restored the same as morphia, by excess of alkali; but as this is very rarely used in medicine, it seems to be of very little importance. In powder, it is colored brown-black by strong nitric acid, by which behavior it is readily distinguished from morphia.

Colchicia gives a yellow color with the chlorinated lime solution, but so slight that it is of little importance.

Aloin gives a dark-red color, part of which is due to the alkali; the color is only partially destroyed by excess of an acid.

The only other alkaloid which I have found that gives a similar reaction with chlorine is brucia.

Any solution of chlorine added to an acid solution of brucia gives a bright red color. Alkaline solutions of chlorine do not react with the powder; but if a drop of an acid be first added, a deep red color is produced.

Excess of chlorine decolorizes both, and the color cannot be restored. Strong acids and alkalies cause no changes; thereby it is readily distinguished from morphia, and the reaction becomes a characteristic and delicate test for brucia.

While conducting these experiments, I have had access to Prof. Maisch's and other extensive collections of alkaloids and proximate principles, and have found all others, besides those enumerated above, to give a negative, or nearly so, reaction with the alkaline solution of chlorine.

In testing for morphia, the solution must be neutral or alkaline; excess of chlorine must be avoided, and no substance should be present which will give a red color with alkalies.

New York, June, 1874.

PHARMACEUTICAL NOTES.

By G. J. Luhn.

On pages 150 and 154 of the *American Journal of Pharmacy* there appear two errors, one in the formula given for syrup of croton chloral hydrate, and the other, in the formula for tincture of phosphorus, which it would be well to correct.

In order to give two grains of croton chloral hydrate in each fluidrachm, the formula published ought to read as follows:

Croton chloral hydrate,	96 grains (instead of 64 grs.).
Pure glycerin, . .	½ fluid ounce.
Hot distilled water, . .	1½ fluid ounce.
Simple syrup, . .	4 fluid ounces.

The formula, as it stands, with 64 grains of croton chloral hydrate to the six ounce mixture, would make each fluidrachm contain only one and a third grains. It seems strange that, in every republication of this article, and I have three now in my possession, this error should not have been noticed before.*

I find the following preparation, containing two grains of croton chloral hydrate to each fluidrachm, can be easily made in a very short time, and I think will keep well. It is so readily made, however, that there is no neccessity for keeping it on hand:

Croton chloral hydrate, . .	24 grains.
Tincture orange-peel, . . .	1 fluidrachm.
Glycerin, } Water, } . . .	each, 2 fluidrachms.
Simple syrup, ...	7 "

* Both formulas referred to above give the quantities in the weight (not in *measure*) of the British Pharmacopœia; converted into the equivalent measure, the formula for syrup of croton chloral hydrate will be found to yield 4 fluid ounces, 7 fluidrachms, 10 minims; and the formula for tincture of phosphorus 18 fluidrachms, 42 minims, if evaporation is totally prevented.—Ed. Am. Journ. Pharm.

The ingredients ought to be added in the order in which they are written, and the result will be a clear brownish solution. You will note that the tincture of orange-peel and simple syrup are in the proportion of the formerly officinal syrup of orange-peel.

The error in the tincture of phosphorus is also in the quantity contained in each fluidrachm. The proportion of phosphorus, according to the formula given, is only one-twentieth of a grain to each fluidrachm and not one-twelfth of a grain as stated. There being twenty, or nearly twenty, drachms of fluid substance, used in the manipulation of one grain of phosphorus.

In connection with this subject I desire to offer a formula which I have used for some time, and which I have styled (under the present elixir epidemic) elixir of phosphorus. It has been satisfactorily prescribed by a number of physicians in this city:

℞	Phosphorus, ...	gr. i.
	Æther sulph. conc., ...	f℥iiss.
	Alcohol, ...	f℥i.
	Tr. menth. pip., ...	f℥ss.
	Bower's glycerin, . q. s. to make	f℥iii.

The phosphorus completely dissolves in the ether in about twenty-four hours, care being taken to introduce no water into the ether with the phosphorus. After the solution of the phosphorus is effected, the alcohol may be added, but the glycerin should be added in small portions, and the mixture shaken after each addition and allowed to stand until it becomes clear before another portion of the glycerin is introduced.

A great deal of care has to be exercised in the addition of the glycerin; if too much be added at a time it will disengage a quantity of phosphorus, which will fall to the bottom. The essence of peppermint may either be added with the alcohol, or as the last ingredient, the latter is preferable, especially if the preparation is not made with 95 per cent. alcohol. Some apothecaries, I believe, use 80 per cent. alcohol in making it.

This preparation contains one-twenty-fourth grain of phosphorus to each fluidrachm, or teaspoonful. It is quite burning to the taste, but can easily be administered in a little simple syrup, when it will not be at all unpleasant to take. It has quite a milky appearance when mixed with syrup, but I do not think the phosphorus is precipitated, at least not rapidly enough to prevent its being taken.

I have also often added fluid extract of nux vomica to this preparation in quantities of three drops to each fluidrachm, and in this form it has been styled compound elixir of phosphorus.

Charleston, S. C., June, 1874.

MISTURA ASSAFŒTIDÆ AND MISTURA AMMONIACI.

By J. W. Wood.

The preparation of these two mixtures in accordance with our Pharmacopœia is not calculated to inspire, in case of the former, the most agreeable impressions imaginable upon the olfactories of the pharmacist; nor in the latter, if an impatient customer is waiting for it.

From the instability of the aqueous mixtures of these gum resins, we are precluded the possibility of keeping them always ready for dispensing.

To overcome this disadvantage I have devised the following convenient, and, I presume, altogether unobjectionable, mode, which will at once commend itself at least to those whose remembrance of odorous mortar and wearied elbow does not contribute to the charms of their profession. The improvement consists in forming a solution, or at least suspending the gum resins in a certain proportion of pure glycerin, which mixtures are to be kept for adaptation to their purposes, as follows:

℞.—Assafœtidæ electæ, ... ℥ii.
Glycerinæ puræ, ... ℥vi.

Cut the assafœtida into small pieces, and, together with the glycerin, introduce into a capsule, and subject to a moderate heat, constantly stirring and triturating with a pestle. In a short time the solution will be effected, and the result will be a liquid, not too thick for easy manipulation, each troy drachm of which will represent fifteen grains of the gum resin. Transfer to a wide mouth bottle, and label according to contents.

Now, if we receive a demand for, say four ounces of mistura assafœtidæ, we need simply ascertain the weight of the bottle, and add therein exactly four drachms (troy) of the above glycerole of assafœtida, and afterwards water sufficient to make the measure, and, with a shake or two, the thing is done, the result being a handsome

preparation, much less susceptible of change than the officinal mistura, by the presence of the glycerin, which is certainly unobjectionable, and may possibly be advantageous therapeutically.

The only extra precaution necessary in preparing the glycerole is to guard against employing too great a degree of heat, so that the volatile oil may not be dissipated.

Mistura ammoniaci is prepared in precisely a similar manner as the foregoing, the proportions being the same, and the result being equal, if not superior, to that made by the officinal formula. It certainly, in point of convenience and facility, possesses a decided advantage.

Wilmington, Del., June, 1874.

ANALYSIS OF THE BARK OF *CEPHALANTHUS OCCIDENTALIS* LIN.

By Edgar M. Hattan, G. P.

From an Inaugural Essay.

The bark of the buttonbush or pond dogwood was brought to my notice by an article in the *American Journal of Pharmacy*, 1872, p. 195, where it is stated that the bark has been repeatedly recommended as an expectorant useful in consumption. In the U. S. Dispensatory, it is said to be laxative as well as tonic, and to have been given in periodical fevers.

The following experiments were made with the bark, which was collected by myself, in the month of September, in New Jersey. It consists of a comparatively thick corky layer, externally of a dark-gray color, with patches of green, exceedingly rough, with longitudinal furrows; the thin liber portion is smooth, and when first removed was white, but soon changed to a reddish-brown color.

An infusion of the drug when heated does not coagulate nor become turbid, showing absence of albumen. Tannin was found present, the variety precipitated green with salts of iron. Trommer's test gave evidence of sugar. Starch was found in a decoction by the addition of iodine. Potassium iodohydrargyrate gave no precipitate in an acidulated infusion, showing absence of alkaloids. A distillate was perfectly clear, neutral to test paper and with a slight aromatic odor.

Eight troy ounces of the drug were then decocted, the decoction being of a dark color, with a bitter and astringent taste, was treated

with neutral acetate of lead and filtered. The filtrate yielded, with basic acetate of lead, a precipitate as the first. After washing both lead precipitates with water, they were treated separately with alcohol (sp. gr. 835, the strength used throughout the experiments.) AmHS showed absence of lead in the alcoholic solution from neutral acetate of lead precipitate (No. 1), but that from the basic acetate of lead precipitate (No. 2) having lead present, it was removed by H_2S. Both solutions were remarkably fluorescent. They were concentrated, filtered and set aside to crystallize. No. 1 deposited at first a yellow resinous matter, and after standing longer, needle-shaped crystals formed; when ignited on platinum foil, a residue was left, consisting of calcium and potassium. No. 2 at first deposited white opaque feathery and spherical crystals, afterward beautiful needle-shaped crystals on the bottom and sides of the vessel.

Both sets of crystals were slightly soluble in water, soluble in ether. A small portion of opaque crystals were re-crystallized in a test tube and gave crystals corresponding to the others; hence they are apparently identical. These crystals give a slight acid reaction and had a leathery taste. On igniting part of second product on platinum foil, a residue was left, which proved to be potassium.

Crystals of No. 1 were dissolved in hot water slightly acidulated with HCl, and on cooling was agitated with ether. The ethereal solution on separating was decanted and set aside, leaving on evaporating, needles, which burned without residue.

With the crystals of No. 2 the same result was effected. From the appearance of these two sets of crystals and the decided fluorescence produced by them when in solution, and especially on the addition of alkalies, they were considered identical and the fluorescent principle of the drug. The effects of this principle were noticed to some extent in most every solution throughout these experiments.

The following results were obtained with the crystalline body:

In an aqueous solution, alkalies intensify the fluorescence; acids destroy the fluorescence, but it is restored on the addition of an alkali.

It dissolves more readily in dilute acids and alkaline solutions than in water alone.

An alkaline solution is not completely decolorized by acids.

Alkaline solutions are blue by reflected and yellow by transmitted light.

On addition of metallic salts to an aqueous solution, no precipitate is formed, except with basic acetate of lead, which is yellow.

The crystals when dissolved in dilute HNO_3 gave a solution of yellow color, and when supersaturated with hydrate of potassium it became light red.

These reactions and the solubility as noticed, are the same as those of æsculin. Although agreeing in so many respects with æsculin, it was found not to be a glucoside.

The resinous deposit from No. 1 was next examined. It was soluble in alcohol, but insoluble in ether, and was split into glucose and another principle similar in appearance to the resin, but of lighter color, by boiling with dilute H_2SO_4.

The filtrate from the decoction, after being treated with the lead salts, was acted upon by H_2S, heated, filtered and concentrated; it was very bitter. This solution was digested with charcoal, and, after being washed with water and dried, it was boiled in alcohol until nothing more was taken up by that menstruum.

The alcoholic solution was concentrated and set aside; no crystals but an extremely bitter extract was obtained, which was translucent; freely soluble in water and alcohol, very sparingly soluble in chloroform and ether, and completely insoluble in benzin. It gave an acid reaction to test paper, which may perhaps be due to the fluorescent principle with which it was found to be contaminated, and which was not completely removed by ether. Several ways were tried for crystallizing this substance, but without succes.

The above filtrate from the charcoal was evaporated to a syrupy consistency and tested for sugar. Trommer's test showed its presence in cuprous oxide being formed gradually at the ordinary temperature; the syrup was uncrystallizable.

Twenty-four troy ounces of the drug were next exhausted with alcohol and gave a light-colored tincture, which was fluorescent. It was evaporated to an extract of an astringent bitter taste. Water was added to the dregs after exhaustion with alcohol, until it passed through the percolator almost colorless; it gave a solution considerably darker in color than the tincture, with fluorescence and astringent and bitter taste. This was also evaporated to an extract, in which the bitterness was not near so predominant as in the alcoholic extract, and was deprived of it on being treated with alcohol.

The *alcoholic extract* was exhausted with a limited quantity of water and filtered. The filtrate was perfectly clear, but on addition of more water, a cloudiness was produced, and on standing, a portion

of resin was deposited and then the solution became clear again, but on addition of more water, the same result was obtained, until quite a quantity of water had been added.

The resinous residue was of a light-brown color, and on being treated with ether, about one-third was taken up and gave a soft residue of yellow color.

The alcoholic resin on the removal of this lighter-colored resin became dark-brown, granular, and left a lasting bitterness in the fauces. It was insoluble in chloroform and benzin, soluble in alkaline solutions. A portion dissolved in solution of potassa was precipitated by HCl; also by solution of cupric sulphate, insoluble in excess of potassa. On boiling another portion with dilute H_2SO_4, it was proven to be a glucoside, giving glucose and a light-brown powder as the other product. This resin was considered identical with the glucoside obtained from the neutral acetate of lead precipitate. The drug being laxative with presence of the tannin, it was supposed this resin might possess purgative properties. Five grains were taken, but no result realized.

The ethereal resin on being treated with benzin, was deprived of a fatty substance, leaving a granular residue with bitter taste, an acid reaction, and perfectly soluble in chloroform.

The aqueous solution from the alcoholic extract on being agitated, considerable froth was formed, which remained permanent, in this respect corresponding with saponin, but solution of baryta produced no precipitate. The solution was concentrated, boiled with oxide of lead, filtered and the excess of lead removed by H_2S. It was then heated, filtered and evaporated to a very concentrated state. In this the frothing principle was still retained; alcohol added to this to preserve the solution, caused a copious light-colored deposit. The precipitate was collected, and on drying, became almost black; it had a slight bitter taste at first, but it was not lasting; was neutral to test paper, and on agitation with water was partially dissolved, causing quite a foam. On evaporating the filtrate, from which this principle was obtained, it was found to contain glucose and an intensely bitter principle, as did the filtrate from the decoction treated with lead before digesting with charcoal. This, on agitation with water, still frothed, but not to the extent of the precipitate.

A concentrated solution of aqueous extract obtained, as before stated, from the dregs after exhausting the drug with alcohol, was treated

with alcohol to precipitate the gum. The precipitate dissolved in water was treated with neutral acetate of lead, which removed coloring matter; and in the filtrate, after the removal of the lead and concentration, a white precipitate, answering to tests for gum, was obtained by alcohol.

The filtrate from which the impure gum was removed, was concentrated, agitated with ether, and from the decanted ether, on spontaneous evaporation, needles were deposited on the sides of the capsule, which left a residue on ignition, consisting of calcium and potassium. The acidulous radical corresponding in behavior with the fluorescent principle contained from the salt, which was obtained from the neutral acetate of lead precipitate.

The proximate constituents of the bark are a crystallizabe fluorescent acid, a bitter principle (uncrystallizable), a principle resembling saponin, tannin, two resins, fatty matter, gum, glucose and starch.

Two troy ounces of the bark were incinerated and yielded twenty-four grains, or two-and-a-half per cent. of ashes, which contained carbonic, sulphuric, phosphoric and silicic acids; potassium, sodium, calcium, magnesium and iron bases.

The buttonbush or swamp dogwood belongs to the natural order of *Rubiaceæ*, is a shrub growing to the height of ten or fifteen feet and is found in Canada and the United States, growing in swamps and on the margin of ponds and brooks. The flowers are white and congregated in peduncled spherical heads, which give to the shrub quite a characteristic appearance.

ON THE OCCURENCE OF ARBUTIN IN ERICACEOUS PLANTS.

By John M. Maisch.

Arbutin was discovered, in 1851, in the leaves of Uva ursi by Kawalier,* and recognized as a glucoside, splitting into sugar and arctuvin. The latter body was further investigated by A. Streeker, and in 1858 announced to be identical with hydrokinone,† the nitro-compounds of which were more fully described by him in 1861.‡ In 1859, Uloth found in the dry distillate of the extract of several ericaceous plants (*Chimaphila umbellata, Calluna vulgaris, Ledum palustre* and *Vac-*

* See American Journal of Pharmacy, 1853, p. 68.

† Annal. d. Chem. und Pharm., cvii, 228.

‡ *Ibid.*, cxviii, p. 292.

cinium myrtillus)* besides pyrocatechin, a neutral crystallizable principle, which he named ericinon, and which Hesse† believed to be identical with hydrokinone. This identity was subsequently (1864) proven by Zwenger and Himmelmann,‡ who separated arbutin from the leaves of *Chimaphila umbellata*, and found that this principle yields, on dry distillation, hydrokinone, but no pyrocatechin, while among the products of the dry distillation of kinic acid they observed pyrocatechin, besides hydrokinone, as announced by Woehler in 1844.§ The hydrokinone which is found in the dry distillate of ericaceous leaves is therefore ascribed by them to the presence therein of arbutin, while in the leaves of *Vaccinieæ* it is due to kinic acid, the presence of which has been proven by Zwenger for the leaves of *Vaccinium myrtillus*.‖ In 1870, E. Claassen¶ announced having obtained a crystalline principle from the leaves of *Vaccinium vitis idæa*, which I at one time** supposed to be probably identical with arbutin; however, on comparing his process with Zwenger's process for kinic acid, the two will be found identical, except that Claassen has omitted the final treatment with sulphuric acid, thus rendering it probable that his vacciniin is simply kinate of calcium. This supposition is confirmed by comparing the properties of this so-called vaciniin with those of kinate of calcium,†† the main difference will be found to be that the latter is stated to be *nearly* tasteless, while vaciniin is of a *somewhat* bitter taste (kinate of potassium is decidedly bitter); moreover, the absence of lime in vacciniin has not been proven by Claassen, for he merely says that his crystals are *reduced to coal by a stronger heat.*

This position appears to be further strengthened by the results of an analysis of the leaves of *Gaylussacia resinosa*, Torrey and Gray, (*s. Vaccinium resinosum*, Lin.) undertaken at my suggestion by Mr. Hugo Oppermann, and reported in his inaugural essay, recently presented to the Philadelphia College of Pharmacy. Arbutin could not be

* Annal. d. Chem. uud Pharm., cxi, p. 215–229.
† *Ibid.*, cxiv, p. 301.
‡ *Ibid.*, cxxix, p. 203–208.
§ *Ibid.*, li, p. 146.
‖ American Journal of Pharmacy, 1861, p. 128.
¶ *Ibid.*, 1871, p. 297.
** *Ibid.*, 1871, p. 235.
†† See Gmelin's Chemistry, Cavendish Edit., xvi, p. 229.

obtained by any process, nor could its presence be detected by Jungmann's phospho-molybdic acid test; but the liquid from which coloring matter had been removed by acetate of lead and sulphuretted hydrogen, and which still contained calcium, had a bitter taste. The preparation of kinic acid was not attempted.* The leaves of our American *Vaccinieæ* deserve further investigation in the direction indicated above, since some at least yield hydrokinone on the dry distillation of their extract, as I have satisfied myself of the leaves of *Vacc. stamineum*, Lin.

While it seems probable, from the foregoing, that plants of the suborder *Vaccinieæ* contain kinic acid, instead of arbutin, the latter principle appears to be widely distributed among the plants belonging to the suborders *Ericineæ* and *Pyroleæ*. Besides those mentioned above, it has been obtained by Mr. Jefferson Oxley from *Epigæa repens*, Lin. and *Gaultheria procumbens*, Lin.,† and by Mr. J. H. Flint in *Arctostaphylos glauca*, Lindley. To these must now be added *Chimaphila maculata*, Pursh, from which Mr. Bartholomew Bantly‡ obtained it in handsome crystals.

Most of these plants have been employed in medicine in diseases of the urinary organs, diuretic properties being ascribed to them. Prof. C. D. Schroff§ observed no diuretic effects from half a gram of pure arbutin, while E. C. Hughes‖ found his ursin, which J. Jungmann¶ has since proven to be arbutin contaminated with gallic acid to possess diuretic properties. Is it not possible that tannin or gallic acid is necessary to induce the diuretic action of arbutin?

It is to be hoped that similar investigations will be performed with the leaves of other plants belonging to the natural order *Ericaceæ*.

* H. Oppermann found, in the leaves of *Gaylussacia resinosa*, a bitter principle (kinic acid?), resin, sugar, tannin, malic acid, chlorophyll, coloring matter, some fat and wax; and in the ashes potassium, sodium, calcium, magnesium, aluminium and iron.

† American Journal of Pharmacy, 1872, p. 250.

‡ Thesis presented to the Philadelphia College of Pharmacy, 1874. Mr. Bantly also found tannin, resin, glucose, gum, some starch and fat.

§ Pharmacologie, 1862, p. 142.

‖ American Journal of Pharmacy, xix, p. 89.

¶ *Ibid.*, 1871, p. 204.

A UNITED STATES AND BRITISH INTERNATIONAL PHARMACOPŒIA.

By Prof. Chas. Hermon Thomas, M. D.

There is something more than a sentimental relation suggested by the fact of our speaking the same tongue as the British nation. To the physician and pharmacist this is a matter of everyday recognition. The professional text-books and journals of both countries, devoted to medical science, are used in common in their colleges and public and private libraries, and in all departments but one—and that confessedly of prime practical importance—the terms used by authors convey a precise and identical meaning; while in that of materia medica, including pharmacy, the proper English and Latinized names employed are permitted to convey different meanings when used in the two countries, notwithstanding the liability to fatal mistakes added to the confusion thus engendered. If the same disparity of definitions of techicnal terms had existed in chemistry, anatomy, surgery, gynæcology, etc., that is found in materia medica, arising, as is does, out of the different proportions of constituent materials used in the medicinal preparations, common by name—but by name only—to both the United States and British Pharmacopœias, there never would have arisen that constant useful interchange of thought and experience which now exists; and if it were possible to introduce such a disparity in the ideas conveyed by like words into other departments of scientific literature as exists in this, it would undoubtedly prove a barrier to communication scarcely less formidable than a total difference in tongue or race.

The British and Foreign Medico Chirurgical Review for January, 1874, contains an article on the U. S. Pharmacopœia, which, while giving us credit for introducing certain improvements, such as the class of glycerites, closes with the following suggestive paragraph:

"There is almost a constant departure from the directions given in the British Pharmacopœia, in the matter of proportion of ingredients used; so that whilst many tinctures and infusions are considerably stronger than ours, there are many weaker. Thus, for example, the infusions of calumba, cascarilla and senna are made only of half strength, whilst those of digitalis and gentian are considerably stronger, the former being of double strength.

"Likewise in the matter of tinctures, we find the tinctures of aconite, belladonna, nux vomica and cantharides made double strength, while

those of cannabis, of hyoscyamus, of digitalis and of colchicum are one-fourth weaker. Lastly, tincture of opium and the camphorated tincture are made weaker than the British preparations.*

"It may be that the Americans are justified, at all events in some cases, in not following our authorities in this matter of strength of preparations; but at the same time it is a matter of regret that greater uniformity in this matter, between two nations speaking the same tongue and so intimately bound together by social and commercial ties, does not prevail.

"To British medical men cast abroad in America, and to American physicians landed in England, it must be vexatious, and at times a cause of injury to patients, to find that well-known formulæ, common

*The relation in the strength of these preparations is not correctly given by the *Brit. and For. Med. Chirurg. Review;* the difference in the officinal weights and measures have evidently not been taken into account. On close examination it will be found that the preparations of the two Pharmacopœias agree much better than the above quotation would lead us to believe, in fact, the majority, we believe, are *practically* identical in strength, like tincture of digitalis, hyoscyamus, etc.

It must be remembered that 30 fluid ounces of British Pharmacopœia are equal to 29 fluid ounces of U. S. Pharmacopœia, the difference being only about 1½ fluidrachms, and that the British ounce weighs 42·5 grains less than the U. S. troy ounce. One fluid ounce (imperial and U. S. measure) of the above mentioned preparations contains of the active drug the following number of troy grains:

	Brit. Pharm.	U. S. Pharm.	
		In fld. oz. imp.	In fld. oz. wine meas.
Infusum Calumbæ,	21·87	14·5	15
" Cascarillæ,	43·75	29	30
" Digitalis	3	7·25	7·5
" Sennæ,	43·75	29	30
Tinctura Aconiti rad.,	54·7	174	180
" Belladonnæ,	21·87	58	60
" Cannabis,	21·87	21·75	22·5
" Cantharidis,	5·47	14	15
" Colchici,	54·7	58	60
" Digitalis,	54·7	58	60
" Hyoscyami,	54·7	58	60
" Nucis vomicæ,	43·75	116	120
" Opii,	32·8	36·25	37·5
" Opii camphorata,	2	1·813	1.875

—Editor Am. Journ. Pharm.

by name to both, differ widely in their doses and activity on one and on the other side of the Atlantic.

"Speaking generally, these variations unhappily affect the more potent remedies rather than the others.

"The notion of an international pharmacopœia has been broached, and has many recommendations, although we apprehend the more or less divergent medical opinions afloat in different countries, and still more, circumstances dictated by peculiarities in modes of life, in climates and in floras, will lead each nation to claim more or fewer special drugs, and so destroy absolute uniformity.

"On the other hand, there would be a sufficient array of substances and formulæ admitting of so much concurrence as in some measure to attain the object desired. But, however this may be, there is good reason for bringing the British and United States Pharmacopœias more in accord, and so far making the first move towards an international codex, and we should be pleased to hear of communications being opened between the committee for the British and the convention for the United States' Pharmacopœia in anticipation of so desirable an object."

No teacher who has endeavored to instruct a class in medicine or pharmacy composed of students representing both nations will fail to realize the difficulty—not to say impossibility—attendant upon the labor of attempting to define and fix upon their minds the ever varying strength and dosage of such important officinals as the reviewer has here cited.

And no physician who has read the standard British authors on therapeutics, practice, diseases of women and children, and the like, with a view to making their precepts available in the treatment of disease, will dissent from the assertion that the value of such works is seriously impaired and sometimes entirely destroyed by the same fact.

The subject is one of far too great importance, and the defect too grave in its actual and possible consequences, to be allowed to remain longer unrecognized; and there can be no doubt that the suggestion at the close of the above quotation will find hearty approbation and coöperation wherever the question is presented.

Probably the chief obstacle to a universal pharmacopœia, for all civilized nations at least, will be found in the diverse systems of weights and measures employed in different countries; but there are

indications that the general interest in and acceptance of the new chemistry with the adherence of its writers to the metrical system will serve as an easy introduction for the essential, necessary for a satisfactory means of intercourse.

And problably, also, the use of the metrical system will have to become more familiar to scientific men at large than it is at present, before universal communication will be seriously attempted in this direction. But this question aside for the present, we are on a footing for establishing at once a unity of standard for the composition of the principal preparations of the Pharmacopœias of the English-speaking people, and this notwithstanding the radical differences between the systems of weights and measures in Great Britain and in this country respectively.

The expedient needed to be adopted being no other than for the United States and British pharmacopœial authorities to unite in putting into force the rule established by the Scandinavian nations at their international convention held in 1865, when the pharmacopœias of Norway, Sweden and Denmark were unified, and which rule is to express the relative quantities used in pharmacy in proportional parts by weight, as *e. g.*, two parts by any system of weight of the first ingredient, four of the second and one of the third, etc., thus securing like relative proportions in all standard compounds.

At the U. S. Pharmacopœial convention, which met at Washington in 1870, the following resolution of like import was ordered to be taken as a basis for the last decennial revision of our Pharmacopœia; but, for some reason never satisfactorily made known, the Committee on Revision appears to have disregarded its plain provisions:

"*Resolved*, That measures of capacity be abandoned in the Pharmacopœia and that quantities in all formulas be expressed both in *weights* and in *parts by weight*."

The consolidation already effected of the London, Dublin and Edinburgh in the British Pharmacepœia, the several Pharmacopœias of Central Europe constituting the German Empire and some others all tend to assure the practicability, as well as to suggest the advisability, of the step here proposed.

The advantages to be obtained by an internatinnal adjustment of at least the two Pharmacopœias in question, so that a given name shall indicate a preparation identical in composition and strength in

both countries, are obviously many and important. The objections to such a change few and insignificant.*

THE PROBLEMS AND FUTURE OF PHARMACY IN GERMANY.

By Fred. Hoffmann, Ph. D.

It appears to be of interest and utility to take notice of the problems which are now being discussed in Germany, where pharmacy has been, for over two centuries, the main cultivator of natural sciences, and as such, and as a branch of the healing art, has attained a position not reached in any other country, and where not only its sphere and import, but even its very existence seems to be at stake. Though the political, social and industrial conditions of Germany and the other European countries differ in many respects from those of North America, it will be found that the aims and interests of pharmacy, and its relations to other trades, are the same everywhere; and for this reason, the crisis into which pharmacy has entered in Germany, merits a wider attention. With the radical changes of popular views, in consequence of general intellectual advancement and the popularization of all branches of physical and sanitary sciences and of rational medicine, the former state and practice of medicine, and also of pharmacy, have undergone considerable changes in Germany and in Central Europe. Although difficult to comprehend outside of Germany, the most important necessary consequence has been the removal of all restrictions formerly placed, on the part of the State, upon the practice of medicine and hygiene, in Germany as well as in Switzerland. Medicine, in consequence of its extent and its unlimited sphere of application, has separated into several parts, which in study as well as in practice, have more or less become specialties, while some branches have become the common property of all well educated, and have occasionally been successfully practised also by others than physicians. Notwithstanding these innovations, modern medicine progresses; "with the higher aim that its object is not so much the cure, as rather the prevention of disease." (Virchow.) As another consequence of these tendencies the fact was lately stated, that "modern medicine has ceased to resort to and find its centre of gravity in the

* Dr. Thomas will be glad to collect suggestions from those interested, as to the best and most direct steps to be taken to secure the desired result. His address is 108 N. Twelfth St., Philadelphia, Pa.

pharmacies." (Pettenkofer.) How far these assertions represent the reality, may be judged not only from the pharmaceutical papers, but far better from the number and quality of popular science publications covering the field of hygiene and sanitary and medical sciences; the widely-known popular works which have passed through many editions and translations, of Professors Bock and Reclam, of Leipzig, may be mentioned as instances.

The medical schools have skeptically discarded a large portion of the old array of remedial agents, and retained comparatively few substances of certain chemical composition and hence proportionable with exactness; these are more and more administered by subcutaneous injection or in minute concentrated doses, and in forms which are more handsomely prepared by the confectioner than the apothecary, while the preparation of the chemicals has been transferred from the laboratory of the latter to that of the manufacturer,* so that the sphere of the apothecary has been materially narrowed and simplified, and a chemical knowledge, though always desirable, is not in the same degree requisite as heretofore.

When, therefore, we hear of a decline of pharmacy and of a decrease of its efficiency in Germany and other European countries, as yet not a degeneration of pharmaceutical education and proficiency, nor of the status of pharmacy, is intended; but principally the reaction of the conditions briefly sketched above upon pharmacy. An increase of medical skepticism and a lessening in the public mind of the value of remedies must certainly be followed by the lowering of the importance of pharmacy. Medicine cannot well be subject to such a retrogression, because its successful practice lies in an unalterable path, concerning the instability of human nature and life, and presupposes, besides actual knowledge, an individual fitness, technical skill, experience and judgment, with which the educated physician can always successfully encounter the ignorant or half educated competitor, while the competition amongst pharmacists scarcely exists upon the scientific, but almost exclusively upon the mercantile field.

The future status of pharmacy in Germany, as influenced by these factors, and in consequence of the rapid intercourse of nations and the generalization of ideas, their influence upon pharmacy in other

* See synopsis of lecture in *Druggists' Circular*, 1874, March, p. 57; and *Pharm. Jour. and Trans.*, March 28, 1874, p. 781; also Prof. Redwood's lecture on the "Past, Present and Future of Pharmacy." *Ibid.*, April 25, 1874, p. 863.

countries has been for some time the subject of deliberations in the pharmaceutical journals and in the meetings of pharmaceutical societies. To this must be added the pending abrogation of the protective grants, an institution antiquated in its origin and nature, but which has been one of the most important factors through which German pharmacy has reached its high status and its pregnant co-operation in the advancement of the physical sciences. The nature of these grants has been explained by me in a former paper, entitled "Pharmacy in Prussia and the German Empire."* Latterly, besides many reforms in relation to arts and industry, the grants and concessions have been abolished, and since the release of the practice of medicine, that of pharmacy appears to be merely a question of time and a financial problem, the solution of which is attended with so many difficulties, because upon these grants large amounts have been invested, which, with the legal abolition of the former, would be lost as far as they exceed the real value of the business. This question of national economy, which is now being discussed and is under consideration before the government and the legislature (Reichstag) in Germany, has been apparently satisfactorily solved in Sweden in this manner, that every newly established pharmacy has to contribute a certain sum, in accordance with fixed principles of valuation, towards the redemption of the capital invested in pharmacies, as far as its value is lessened in the same place. It is probable that a similar way will be chosen in Germany for the inevitable solution of this problem.

These are, in brief, the principal causes of impediment to the progress and prosperity of pharmacy in Germany, and which have tended to keep talent and capital from being invested in pharmaceutical pursuits, and to induce many young and promising pharmacists to leave their chosen avocation for others more remunerative.

Among the recent publications on this subject, those of three pharmaceutical authorities, equally prominent by experience, knowledge and standing, have attracted a wide attention, namely, those of Professor Dr. Phoebus, of Giessen,† of Professor Dr. Hlasiwetz, of Vienna, and of Mr. W. Danckwortt, of Magdeburg, formerly Chief Director of the North German Apothecaries' Association. The following synopsis of the remarks of the two last-named men may

* American Journal of Pharmacy, 1871, p. 389.

† Pharmac. Zeitung, Nos. 17, 35, 47, 67, 85 and 89, 1873.

serve to elucidate more fully their views of these vital questions and their bearings upon the future of pharmacy in Germany.

Prof. Hlasiwetz, formerly an apothecary, now Professor of the Imperial Polytechnic School of Vienna, in a recent lecture on Modern Pharmacy,"* said in substance:

"Until recently, chemistry had its ablest and most useful representatives among the pharmacists, and for a long time this profession has pre-eminently supplied the chairs of chemistry of the universities with professors to whom we owe the vast amount of labor and discoveries which were necessary to bring practical and theoretical chemistry to its present scope and position. But this has greatly changed by degrees, the consequent rapid progress has called forth a chemical industry of the most varied description and extent, which, in its rapid strides has substituted the methods of manufacturing on a large and commercial scale for those on a small scale in the laboratory of the pharmacist. This change in the scope and drift of pharmacy has deprived the pharmacist of one of the principal objects and profits of his legitimate business, and since the fact has become fully established that he cannot enter into competition with the manufacturer, neither in regard to quality or price, there is nothing left to his share than to dispose and retail the products of the former. Not only the whole series of medicinal chemicals and alkaloids are now supplied by the manufacturer cheaper and, as regards the latter substances, better, but also those pharmaceutical preparations which belong pre-eminently to the province of the pharmacist; as, for instance, fluid extracts, tinctures, syrups, ointments, plasters, etc.

"Since the inauguration of this sweeping change dates the decline of the so-called pharmaceutical chemistry, and all that the pharmacist yet applies is a moderate degree of analytical skill for the establishment of the identity and quality of the preparations as supplied by the manufacturer. And even this limited sphere of proficiency is encroached upon by the manufacturers by offering on the labels of their preparations brief instruction for ready tests, and by supplying pure and ready-made reagents, so that the tests may be made by any skilled and informed person.

"Our schools and universities still furnish a sound pharmaceutical education and a stock of chemical knowledge; but the truth is that

* Pharmac. Zeitung, No. 8, 1874.

these attainments, as a rule, do not bring fruit, for the reason that pharmaceutical practice has ceased to afford any longer the former compass and opportunity of application, nor a sufficient impetus to practically cultivate the acquired proficiency.

"Moreover, the advanced state of rational medicine has discontinued the use of many remedial agents, and has greatly limited not only the list of materia medica, but also the former liberal administration of medicines; the consequence of this restriction is a decrease of the legitimate business and income of the pharmaceutist; being formerly a remunerative pursuit, it hardly furnishes, any longer, a respectable living to a great many highly-educated men, and we see, therefore, the pharmacist enter more and more upon mercantile resources for subsistence, with the aim to gain, on the other hand, as a dealer, what the professional scope of his business falls short to supply; he enriches his stock with homœopathic and with patent medicines, and enters into competition with the dealer in fancy articles, with the perfumer, the confectioner, etc.

"The business of the pharmacist depends for the future largely upon the drift of the manufacturing business, which, when it should also extend its aim and scope to the production of the medicinal substances in ready-dosed and elegantly-prepared forms, will deprive the pharmacist, more or less, from the last remnant of his proficiency. This inroad has already commenced, and bids fair way to an increasing extent and to success; it tends to relieve the physician from the necessity of prescribing so many grains of Dover's powder, of quinia, of calomel, etc., to be rubbed up with sugar and divided into so many doses; he will merely have to direct his patient to buy a number of dosed capsules or tablets. He will soon find all the chief formulæ of his dispensatory provided in elegant forms and envelopes, disguising smell and taste, and both the physician and the patient will gladly dispense with the old, repulsive forms of mixtures, decoctions, powders, etc. The great number of vegetable drugs of uncertain value and variable quality, will be discarded, and will be replaced by the active principles, obtained from them in a pure and stable form, so that the materia medica of the rational physician will henceforth be like that of the homœopathist, ready prepared and dosed, and all emanating from the manufacturing establishment.

"When system and method will extend and consummate this mode of administration of the remedial agents, nothing will be left of the

pursuit of the pharmacist than a retail dealer of the products of the manufacturer of medicinal articles."

Mr. W. Danckwortt expresses himself in an article "On the Future of Pharmacies,"* thus: "I believe that after forty years pharmacy will have greatly changed its physiognomy; I do not entertain pessimistic views, and consider it an honor to have served for forty years in a profession which I esteem highly, but when I compare its present condition and prospects with those of forty years ago, I cannot but admit that pharmacy is on the decline, and will henceforth degenerate far more rapidly. But thirty years ago chemistry and botany were pre-eminently the sciences of the pharmacist; Berzelius, H. Rose, Liebig, Fresenius, Berg, Henkel, Mohr, and many others of equal fame, emanated from pharmacy. Now-a-days, chemistry has grown in extent and volume so vastly, and its practical application embraces such a wide compass, as completely to leave behind the pharmacist's sphere. Yet the pharmacist has maintained a comparatively high status of chemical knowledge and learning, and a comparatively wide compass of attainment is still required from him. But the fact is that these accomplishments have to be attained mainly to enable him to pass the examination which the State makes yet obligatory; after this, he has not any more the old arena to practically apply and profitably enlist his attainments, nor the former impetus, so that, in many cases, the knowledge acquired at the universities is gradually lost for want of application and encouragement. Formerly, the pharmaceutist used to be the legitimate expert in all forensic investigations; now the extent of knowledge and experience required are such as to exclude him in preference of the professional chemist. The pharmaceutical laboratory of yore has become a myth, and we must admit that most of the medicinal chemicals and pharmaceutical preparations can be obtained cheaper and better when manufactured on a large scale; many of them are now furnished by the manufacturer already dosed and labelled for ready dispensation and retail sale. And when we compare the prescriptions of our days with those of forty years ago, what a change, what a remarkable simplification! The whole array of the old-fashioned decoctions, infusions and mixtures have been discarded; morphia, codeia, quinia, digitalin, chloral-hydrate, atropia, and a number of other principles are the consummation of materia medica, and even the prescriptions for

* Pharmaceut. Zeit., No. 20, 1874.

these disappear more and more from the pharmacies, inasmuch as the physician carries their minimal solutions in his pocket for ready administration by subcutaneous injection, or orders them in tablets or sugar granules as supplied by the manufacturer or confectioner in lieu of the pharmacist.

"Moreover, the rapid progress of general culture, of the knowledge of the rational principles of life and health and the conditions of their maintenance, of the sanitary sciences and of hygiene and medicine, exercise a considerable influence upon the decrease of the use of medicines, for it cannot be denied that knowledge and culture counteract the principles and conditions upon which, to a great extent, the prosperity of pharmacy rests.

"When we have witnessed such changes within the comparatively brief space of forty years, who has the assurance to predict what, or if anything, will be left of pharmacy after another equally progressive lapse of forty years?"

It is not the aim of this essay to parallel the conditions and prospects of American pharmacy with those just described, nor to determine whether and how soon the same questions may come up here, or whether the present state of American pharmacy really justifies the exalted views of the future, as occasionally expressed in valedictories and similar addresses. In its trade relation it has practically the advantage over German pharmacy, inasmuch as it still stands upon the basis of a commercial trade, and cannot therefore be injured in a similar manner by being displaced from a professional basis, secured by a noble career of usefulness and achievements through more than two centuries.

As a natural consequence of the growth and extent of sciences, and the increase and diffusion of learning and a correcter knowledge of nature, which is the tendency of modern times, we must view the fact that an enhanced general, as well as special, education is becoming more necessary in all pursuits and gives the impulse to innovations and reforms, particularly in those pursuits which are based upon the knowledge of the laws of nature, and upon the application of the principles of physical and sanitary sciences, and that this agitation is felt in medicine and pharmacy, precisely as in other circles.

After the first abortive legislative attempt in several States of our Union in demanding directly, and without previous preparation, a higher qualification, the education of pharmacists, and in consequence

thereof a superior status of pharmacy, have made successful progress, and increased facilities for attaining this aim have been inaugurated by the establishment of, and increased attendance at, the various pharmaceutical schools.* In this advance movement, pharmacy stands, however, by no means alone; generalization and unity of sciences on the one hand, and education, scientific knowledge and higher intellectual culture on the other, are, as already stated, the demands of our time, and this tendency pervades in our country, also all classes of its population and all pursuits, and is practically exemplified in the increase and prosperity of all higher educational institutions,—the medical, polytechnic, commercial and other colleges,—and in the entire literature of the present day.

Pharmacy in this country will therefore, probably meet with fewer difficulties on its high road to improvement, and the less so, as it is in the happy position of profiting by the pharmaceutical experience and acquisitions of older countries, and particularly of Germany, without having to undergo the struggles and errors of its gradual development extending over two centuries. The problems which it will inevitably have to encounter with the progress of time and civilization, I have briefly referred to above, and they are more fully stated in Mr. Danckwortt's and Prof. Hlasiwetz's papers; aside from other more technical and less important arguments, they have been felt here likewise for some time, and have been repeatedly and timely expressed,† but appear not to have received due consideration.

The lively interest taken by the American people in progress and the questions of the times, its acceptation for new ideas and their prac-

*If no other, at least one result of high value must be acknowledged to be due to the continued agitation for, and the enactment of, laws regulating the practice of pharmacy, namely, the increased attendance of the pharmaceutical pupils at the courses of the colleges of pharmacy. Although this attendance is not yet dependent upon a preliminary examination and qualification, and though the want of sufficient primary education and knowledge is *a priori* prejudicial to the full value of a course of theoretical study compressed into so short a time, capable and assiduous young men will find at least the path pointed out, and receive the incitement for the further acquisition of knowledge, while American pharmacy will, for the next generation, be supplied with new productive heads and hands for its scientific continuance.

† Dan. C. Robbins, Annual Address, Proceedings Alumni Association, N. Y. Coll. Pharm., 1872, p. 34 and *ibid.*, 1873, p. 30.

Chas. C. Fredigke, in Chicago Pharmacist, 1874, p. 36, and Am. Journ. Pharm., 1874, pp. 209 and 265.

Dr. Streit, in Chicago Pharmacist, 1874, p. 72.

tical application leave no doubt that the modern popularized teachings of hygiene and of the sanitary and medical sciences, which are promulgated by the advanced schools of medicine and by popular literature,* as well as of medical skepticism will here find a fruitful soil, just as homœopathy has found its adherents not merely among the ignorant, but rather among the wealthier and educated classes of society. The consequences of such a popularization of a correcter knowledge of hygiene and of rational methods of preventing, preserving and restoring health without the former resort to unwise and excessive medication, must be the same here as in Europe, as far as the material emoluments of the pharmaceutical pursuit are concerned, and inasmuch as they will in time greatly diminish the income of the pharmacist, they will also be in direct antagonism with the demands of modern times for higher education, which requires increased expenditure of time, labor and money. All legislative restrictions and regulations will prove one-sided and without real and permanent value, as long as they aim to raise the claims for a higher qualification and standard only, without affording, on the other hand, some guarantee for a sure and remunerative application of the higher proficiency, and for the conditions necessary for the material prosperity of the practice of pharmacy. Compared to the physician and the tradesman, the pharmacist occupies an exceptional position; the former applies his individual knowledge and skill without investment of capital or risk, and without any restriction; the merchant chooses his wares according to demand and want, and can control his investments quantitatively and qualitatively; he employs laborers or clerks with less knowledge and without responsibility; his wares usually retain their value, and are less prone to deterioration. In this material age and concrete and practical country of ours, there cannot be expected for any length of time, an acquisition of talent and skill, or a permanent and steady elevation of a calling whose resources appear to be everywhere on the decline,† and which involves an amount of time, resignation and re-

*The Sanitarian, the Herald of Health, and the Journal of Health, are monthlies published in New York. See, also, the annual Proceedings of the American Public Health Association; also, Youman's Popular Science Monthly, No. 10, p. 422; No. 12, p. 665; No. 22, p. 421, and numerous similar publications.

† The practice of our profession is becoming more arduous,—its scientific relations more complicated as civilization and science advance, while its legitima e rewards diminish, because the scope of the business contracts, while compe-

sponsibility as no other pursuit requiring a similar amount of learning, and which, for superior attainments and proficiency, does not offer an adequate equivalent in the shape of pecuniary compensation.

These are some of the problems which American pharmacy will likewise have to encounter sooner or later, and in the discussions of which the recourse to the whole truth will unquestionably prove the best remedy for the evils of imperfectly stated truth. They certainly deserve earnest consideration and invite our congenial interest in the pending strives of pharmacy in Germany for its existence and continuance. Whatever may be the future fate of pharmacy, that of Continental Europe has the high merit of having fulfilled its mission of culture, and particularly in developing and applying the natural sciences, and mainly chemistry, and that its achievements are not perishable, but on the contrary will forever be useful in the further evolution of the healing art and of applied chemistry in general.

GLEANINGS FROM THE EUROPEAN JOURNALS.

By the Editor.

Detection of Turpentine in Liquid Storax. Hager recommends to fuse the storax in a test-tube placed in a water-bath, to add half its volume of absolute alcohol, and effect solution by agitation; this is then agitated with several times its volume of petroleum benzin, and the operation repeated twice. The decanted benzin solutions are united and evaporated in a water-bath, from a tared vessel. The residue should weigh 45 to 55 per cent. of the storax; it should be colorless, with a bluish opalescence, and of an agreeable odor. If turpentine be present, the residue will be yellowish, of the odor of the turpentine, and larger in weight.—*Pharm. Centr. Halle*, 1874, *No.* 21.

The Volatile Oil of the Root of Spiræa ulmaria is not salicylous acid, as stated by Wicke a number of years ago; Dr. R. Nietzki found it to be a compound ether of salicylic acid, which is heavier than water, has the odor of gaultheria oil, and is probably identical with it. 20 lbs. of the fresh root yielded, on distillation with coho-

tition increases and it is evident that, unless we can arrest or overcome these, we cannot long retain in our ranks a superior or desirable personnel. The character of any pursuit depends upon the men who fill it, and we cannot have men of culture and attainments unless they are adequately rewarded. (D. C. Robbins, annual address, N. Y. Alumni Assoc., 1872–73.)

bation, little more than one gram of the oil, which is contained in the rhizome as well as in the rootlets. The flowers, it will be remembered, contain salicylous with salicylic acid.—*Archiv d. Pharm.*, 1874, *May*, 429–433.

A New Method for the Estimation of Tannin has been proposed by A. Terreil; it is based upon the absorption of oxygen by tannin in the presence of alkali; and, from the quantity absorbed, which is determined by measuring it in a graduated cylinder, the amount of tannin is readily calculated. The author found that 0·1 gram of tannin absorbs 20 cubic centimetres of oxygen. The apparatus and manipulation is described in *Journal de Pharm. et de Chim.*, 1874, *June*, p. 445–447. Although vegetables contain other principles which, like tannin, absorb oxygen, the author believes the process to be sufficiently accurate for technical purposes.

Artificial Vanillin has been prepared by Tiemann and Haarmann from coniferin, by heating its aqueous solution with a mixture of bichromate of potassium and sulphuric acid in a flask connected with a backflowing cooler. After cooling, a little resin is separated by filtration, and the liquid is agitated with ether; on evaporation, a yellow oil is left, which crystallizes in a few days. After treatment with animal charcoal and recrystallization from water, beautiful crystals, with the odor and taste of vanilla, are obtained, which fuse at about 80° C. (176° F.), are readily soluble in ether and alcohol, sparingly soluble in cold, more readily in hot water. Analysis gave results agreeing with the formula $C_8H_8O_3$. Carefully heated, it sublimes without decomposition; it has a strong acid reaction, and gives with bases well-characterized salts.—*Pharm. Zeitung*, 1874, *No.* 41, from *Ber. d. d. Gesellschaft.*

Volatile Oil of Tropæolum majus. A. W. Hofmann found that the portion of this volatile oil commencing to boil at 160° C. had a disagreeable odor and contained sulphur. The largest portion, distilling at 226° C. (377° F.), has the formula C_8H_7N and is the nitrile of phenylacetic acid.—*Ber. d. d. Chem. Ges.*, 1874, *p.* 518.

The Volatile Oil of Nasturtium officinale is, according to A. W. Hofmann, a mixture which commences to boil at 120° C. The main portion is obtained at 261° C. (440° F.), and has at 18° C. the specific gravity 1·0014; it is the nitrile of phenylpropionic acid, and has the composition C_9H_9N.—*Ibid.*, *p.* 520.

The Volatile Oil of Cochlearia officinalis was found by A. W. Hofmann to be the mustard oil of the butylic series, having the composition $C_5H_9NC = C_4H_9$, CS, N. It was obtained synthetically, not from the normal, but from the secondary butylic alcohol (methyl-ethyl-carbinol), and had then the characteristic odor of the plant, a specific gravity of ·944 at 12°, and a boiling-point of 159·5° C. (319° F.)—*Ibid.*, 508–514.

A Very Active Preparation of Ergot, which is particularly adapted for subcutaneous injection, is suggested by Dr. Wernich, of Berlin, who proposes to exhaust the ergot with ether, strong alcohol, and finally with water; the infusion is then dialyzed through parchment paper, and the solution evaporated; this extract, after acidulation with sulphuric acid, was mostly soluble in alcohol, and when again carefully neutralized by soda, yielded to weak alcohol all its active properties. Subcutaneously injected, the author obtained good results promptly, and the inconveniences attending the hypodermic use were slight and disappeared rapidly.—*Apothekerzeitung*, 1874, *No.* 17.

ON THE DETECTION OF ALOES AND OTHER BITTER DRUGS.

By O. Bach.*

The difficulty of analyzing many nostrums has induced the author to make a series of experiments and to study particularly the analytical relations of the bitter principles of aloes, colocynth, wormwood, gentian, agaric, scammony and jalap resin. The active principles of the first four are soluble in water; of the others, those of agaric and scammony dissolve in ether, jalap resin remaining insoluble in both menstrua.

An aqueous solution of aloes yields with sugar of lead a voluminous yellow precipitate, with mercurous nitrate, after some time, a pulverulent dirty-colored precipitate. The aqueous infusion of colocynth yields with mercurous nitrate a flocculent, afterwards gray precipitate, conglomerating on boiling; dissolved in nitric acid and treated with ammonia, the filtrate is golden-yellow, and after evaporation to dryness, insoluble in acetic acid, but colored bright-red with concentrated sulphuric acid at a moderate heat, and cherry-red with Froehde's test (conc. sulphuric acid, 1 c.c.; molybdate of sodium,

* Condensed from "Journal für praktische Chemie," 1874, p. 188–193.

·001 gram). Wormwood is soluble in water, with a brown color; it gives with mercurous nitrate a dirty-yellow precipitate, becoming gray on boiling; with subacetate of lead a brown-yellow, and with acetate of barium a brown precipitate; H_2SO_4 colors wormwood brown, Froehde's test at first brown, becoming green, and finally violet. Gentian yields a yellowish opalescent infusion, producing with mercurous nitrate, after some time, a very slight pulverulent precipitate; with acetate of barium from ammoniacal solution a flocculent precipitate, which yields with H_2SO_4 and HNO_3 a yellow, and with potassa a handsome golden-yellow solution. The resinous portion of agaric is soluble in alcohol and partly in hot water, yielding with the latter an opalescent liquid; also in solution of soda, from which it is reprecipitated by acids. It is insoluble even in warm HNO_3. Cold H_2SO_4 dissolves it, with an orange color, becoming brown on heating; nitric acid added to this solution causes decoloration and separates colorless floccules. Scammony dissolves with difficulty* in ether, separating white flocks; readily in alcohol, with a greenish-yellow color; insoluble in solution of sodium carbonate, swelling to a yellow mass in nitric acid, readily soluble in H_2SO_4, being orange-colored at first, and becoming cherry-red after some time. Jalap resin is insoluble in water and ether, H_2SO_4 gives a brown solution, becoming blood-red after awhile and emitting the peculiar odor of jalap.

On examining a medicine for any of the above substances, it is, if necessary, evaporated to dryness, extracted with alcohol, and again evaporated. The dry powdered residue is exhausted with cold water, if necessary, concentrated by evaporation in a water-bath, cooled, treated with mercurous nitrate in excess, rapidly filtered and washed. The precipitate is dissolved in warm diluted nitric acid, when colocynth will be indicated by the yellow color of the liquid and some insoluble flocks; in the presence of wormwood the flocks are scarcely recognizable, and the liquid is brown. Excess of ammonia precipitates the mercury, but dissolves colocynth and wormwood. The filtrate is evaporated to dryness and treated with warm acetic acid; wormwood will be dissolved, and colocynth remains behind, the latter giving with H_2SO_4 and with Froehde's reagent the above-mentioned color reactions. The acetic solution, on evaporation, leaves a yellowish-brown residue, to be identified by Froehde's test as stated above.

* ? Editor Amer. Journ. Pharm.

The filtrate from the mercurous precipitate is treated with ammonia, filtered and acetate of barium added; a precipitate indicates gentian, an orange-red color of the liquid points to aloes. After evaporation to dryness, the residue is exhausted with alcohol, the liquid evaporated, and the residue treated with warm HNO_3. The yellowish-red solution is evaporated to dryness and dissolved in little water, when it will yield a blood-red solution with potassa and glucose, if aloes be present. The precipitate obtained by acetate of barium, containing gentian, is exhausted with alcohol, evaporated and treated with H_2SO_4, HNO_3 or HKO as above.

The residue of the original substance left after treatment with water may contain the resins of agaric, scammony and jalap; to separate them it is treated with ether, the solution evaporated, and the residue treated with warm solution sodium carbonate. If scammony be present, a residue will be left, swelling with HNO_3 to a yellow mass, but soluble in H_2SO_4, with an orange-red color, becoming blood-red on standing. The soda solution is precipitated with an acid; the resin of agaric is insoluble in HNO_3, but dissolves in H_2SO_4, with an orange color.

The resin of jalap, remaining behind after treatment with water and ether, is recognized by its behavior to H_2SO_4, as given above.

A NEW ADULTERATION OF PORT WINE.

By E. B. Shuttleworth.

Having recently had occasion to test a number of samples of port wine, I principally directed my attention to the detection of foreign coloring matter as affording the best evidence of falsification. On applying the test recommended by Lapeyrere,* five out of the fourteen samples examined gave colorations differing from the remaining nine. This test appears to be of some value, but I have no doubt that considerable experience is required before a definite and satisfactory conclusion can be arrived at. Filtering paper is saturated with a solution of acetate of copper, dried, and dipped in the suspected wine. If genuine, a grayish rose-red color is produced. Logwood is said to give a distinct sky-blue, while other coloring matters give modifications of the original natural tint.

On examining by the spectroscope, the nine samples before alluded to, the spectra produced showed no special characteristics, and

*Jour. de Pharm. et de Chimie.

this would go to confirm the statements of Sorby* and Phipson† who found that the coloring matter of the grape gave no absorption bands, but only a general darkening of the spectrum. The five remaining samples of wine gave decidedly different spectra, and one of them so peculiar that I was led to suspect the presence of fuchsin.

A further examination by other tests rendered this fact unmistakeably evident, and I have since ascertained that a mixture of magenta and a blue coloring matter known to the trade as azalin, are largely employed for the purpose of coloring cheap made-up wines. These colors are put up and sold by the dealers in wine and spirit doctoring materials, and are sold at exorbitant prices.

In order to detect the adulteration, I have found the following method to be satisfactory, and very easy of application. To a portion of the suspected wine, placed in a test tube, add an equal volume of fusel oil; agitate well and allow the mixture to separate, when, if magenta be present, the supernatant layer will be more or less tinctured of a characteristic pink or purple color. Genuine port, when so treated, does not impart to fusel oil any of its color, so that the slightest coloration may be taken as certain evidence of adulteration. If amylic alcohol be not at hand, ether may be substituted, but does not answer nearly so well.

Considering the dark color which factitious port must be made to assume, and the large quantity of such wine that is liable to be taken at one sitting, it is evident that the presence of these poisonous coloring matters might produce serious, if not fatal results.—*Canadian Pharm. Journ., June*, 1874.

NOTE ON A SOPHISTICATION OF PAREIRA ROOT.

By John Moss, F.C.S.

Late Demonstrator in the Laboratory of the Pharmaceutical Society.

It was my intention, at the last evening meeting of the Pharmaceutical Society, to have brought before the notice of the members present a sophistication of pareira brava which has not, so far as I know, been previously announced. With this object two specimens had been placed on the table, but the press of other matter crowded out every opportunity of speaking about them.

* Jour. of Microscopical Science, Vol. ix, p. 338.

† Jour. of Chem. Soc., Feb., 1870.

The specimens were taken from a bale of pareira brava, the contents of which were professedly the root only of *Chondodendron tomentosum*; a cursory inspection, however, was sufficient to show the presence of two totally different structures. One of these, which is hard, heavy, and of a dark-brown color, is plainly the root described by Mr. Daniel Hanbury;* the other, which is lighter in weight, paler in color, and much less compact in texture, is as evidently a stem—for the majority of pieces are covered with an easily seen bark, the hue of which is variegated by whitish patches of microscopic lichens and occasional green tufts of moss. A comparison of this stem with an authenticated specimen in the museum of the Pharmaceutical Society, leaves no doubt that it is deriveed from *C. tomentosum*. On the pieces of stem presented by Messrs. Corbyn & Co., the characteristic warts were shown in a marked manner.

The stem is sickly sweet, yet slightly bitter in taste. In the root the bitter taste is very much intensified, and indeed predominates over every other. This difference is best noticed by appropriate comparison of the respective infusions.

The object of this note is to induce pharmacists to examine their stock of pareira, and so prevent the substitution for the root, of the much less active, if not altogether inert, stem. In my opinion, few parcels will be found free from the admixture here described; in the first place, the admixture occurs in the original packages, and in the second, it is very unlikely that experience of this kind is confined to one house. I may say, in conclusion, that two bales, the aggregate of which were 137 pounds, gave 73 pounds of stem—over 50 per cent.—*London Pharm. Journal*, May 16, p. 911.

PERMANGANATE OF ZINC.

By Huskisson Adrian, F. C. S.

A recent report of the Medical College of Berlin contains an account of the use of this salt for injections. It is stated to be much more effective than sulphate of zinc. The following is the usual method of preparing it: Permanganate of silver is thrown down by mixing hot concentrated solutions of permanganate of potash and nitrate of silver, and is afterwards levigated with a solution of chloride of zinc. The chloride of silver is then separated, and the perman-

* Pharm. Journ., Aug. 2, 1873, p. 81, and Aug. 9, p. 102. American Jour. Phar., 1873, p. 449.

ganate of zinc is obtained by concentrating the solution cautiously. It will be seen that this is a troublesome and wasteful process; but I have not yet been able to find one to replace it with advantage. To neutralize permanganic acid with carbonate of zinc *sounds* easy, but this acid has an unpleasant habit of exploding when prepared in the usual way from the permanganate of potash. A modification, also, of the process for making this last-named salt has not given me satisfactory results.

Permanganate of zinc is a dark-red crystalline powder, similar in its general properties to the potash salt. The maximum strength in which I have have heard of its administration is one grain to an ounce of water. Linen dipped into a solution of this strength is stained pink; but the color fades within five minutes to a light-brown, hardly perceptible.

The report to which I have already alluded contains a pathetic account of how some manufacturer imported into Prussia, under the name of permanganate of zinc, a preparation which turned out to be sulphate of zinc colored with permanganate of potash. I find by experiment that a mixture of one part of powdered sulphate of zinc with two parts of permanganate of potash makes an excellent imitation of the zinc salt, although a few drops of a solution of chloride of barium expose the fraud at once. I mention the above simple test in case the same manufacturer favors English pharmacists also with some specimens of his ingenuity. Permanganate of zinc being at present sold at twelve times the price of the potash-salt, the motive of the substitution is sufficiently obvious.—*The Chemist and Druggist* [*London*], *May* 15, 1874.

SOME NEW PREPARATIONS OF PHOSPHORUS WITH GENERAL REMARKS AS TO THEIR THERAPEUTICAL VALUE.

By Dr. Routh.

In a paper read before the Medical Society of London, April 27, 1874, the author stated that this was a corollary to his former communication on "Overwork and Premature Mental Decay." He then had mainly spoken of two preparations of phosphorus, viz., the solutio phosphori medicati, a solution of phosphorus in almond oil, with a little mucilage and essential oil of the strength of one-sixth of a grain of phosphorus to the drachm; and the phosphide of zinc, both used

by Mr. Hammond, of New York. In speaking of the effects of phosphorus as a drug, it was best to take this solution as a standard, and this pointed out the difference in the action of the other preparations. Dr. Routh then spoke of the effects of phosphorus, which were those of a stimulant in small doses, sedative, and producing a pleasant sensation of warmth, relieving neuralgia, and effective against certain obstinate skin diseases, such as eczema and acne, and he thought it retarded the progress of cancer. It was also an aphrodisiac, and appeared to improve the mental qualities if deteriorating. In larger doses it acted as an acrid poison, the peculiar feature being a burning sensation in the mucous tract, and whenever this symptom appeared it was a proof that the medicine had been carried far enough. With some persons it acted suddenly, producing even after the first dose sickness, faintness, and great stomach pain. Idiosyncrasy alone could account for this, and possibly decomposition. For these reasons Dr. Routh recommends the use of sperm oil, or purified neat's foot, in lieu of sweet almond oil; five drops of this solution added to a teaspoonful of cod-liver oil improves the action of the latter in proper cases. The phosphide of zinc has been said to be inert, because insoluble, but it is easily assimilated. Rubbed up in a mortar it emits the characteristic garlic odor, and burns spontaneously when thrown over a flame. It is a weak preparation, and has been safely given in doses of one grain three times a day. Like other preparations of phosphorus, it is apt to clog up the liver, and must then be suspended for a few days. Chloro-phosphide of arsenic is prepared by bringing pure hydrochloric acid into contact with phosphorus and arsenic in a fine state of division. While the phosphide is insoluble the chlorophosphide is very soluble. The solution is of a clear yellow-green and pleasant taste. It is decidedly antiperiodic and effective in cases of neuralgia. This solution contains 10 grains of arsenic, and 16½ of phosphorus to the ounce; the dose is therefore 3 to 5 minims *ter die.* It can be largely diluted, and the author prefers one that is regulated at 15 drops. The syrup of phosphorus contains gr. $\frac{1}{10}$th in the ℥i. The phosphorus should be added in a pure state, and finely divided with caution. It is very nice to the taste; dose, 20 to 30 min. In cases of poisoning by phosphorus, Dr. Routh recommends emetics and an antidote in the form of turpentine, and in conclusion remarked that the exhilarating effects of the drug gained upon patients, and care must be taken lest in this way we introduce a new form of dram-drinking.—*Med. Press and Circ., May* 27, 1874.

IMPROVED FORMULA FOR CHARTA SINAPIS.

By A. W. Gerrard.

Dispenser and Teacher of Pharmacy to University College Hospital.

The formula, given in the "Additions to the Pharmacopœcia," for the preparation of mustard paper is unsatisfactory and expensive. The proportion of solution of gutta-percha necessary to render the ounce of mustard ordered sufficiently fluid for coating is ten drachms. This would contain more than a drachm of gutta-percha, which, when it is applied to the paper and the chloroform has evaporated, gives the surface of the mustard a glossy, varnished appearance. In fact, the gutta-percha acts as a varnish, much retarding the absorption of moisture and the development of the essential oil upon which the activity of the paper depends. Another objection to gutta-percha is its insufficient adhesive power, for the coating cracks and peels from the paper after but slight handling.

With the object of remedying these objections, I made a trial of a solution of india-rubber in benzol as a menstruum; for I judged from its physical properties much less of this than of gutta-percha would be required to keep the particles of mustard cohesive, and at the same time the action would be retarded only to a minimum degree. I found it well answered my intention. After several experiments to determine the most suitable proportions, I have adopted the following:

Take of

Caoutchouc, ...	1 part.
Benzol, ...	49 parts.
Black mustard, in powder, a sufficiency.	

Dissolve the caoutchouc in the benzol; then stir in the mustard till of a proper consistence for spreading on paper.

In this, as also in the B. P. form, the presence of the fixed oil in the mustard gives the back of the paper a greasy appearance. Moreover, its removal, which might be effected either by pressure or by percolation with benzol, would be an advantage, not only as removing the cause of this greasiness, but it would render the mustard more active.

Papers spread with a mixture made according to the form I have here given, have a dull, smooth surface, and the mustard adheres well together, although it contains only one-fourth as much india-rubber

as the British Pharmacopœia formula does gutta-percha. The above preparation readily absorbs water and develops its activity. A piece applied to the arm gave evidence of its presence in less than two minutes, whilst a piece of the B. P. preparation required seven minutes, its full effect being comparatively slight. An estimate of the cost of the two forms shows that a Charta Sinapis prepared as suggested above could be made for one-eighth the expense of the B. P. preparation.—*Pharm. Journ. and Trans.* [*Lond.*], *May* 9, 1874.

PILL COATING.

By J. A. Cope.

The introduction of pills covered with a tasteless kind of enamel, which is perfectly soluble and harmless, is certainly a step towards elegant pharmacy, and has many great advantages over the old method of dusting pills, to prevent their sticking together and to mask the taste. The manufacture of pearl-coated pills has been carried on extensively by several firms during the last few years, and there appears to be a growing demand for the product. The bulk of these pills reach the public through medical men who send out their own medicine, and who, no doubt, are glad to be relieved of the troublesome business of pill-making. And if medical men educate their patients to prefer their pills made tasteless and as attractive as possible, it will not do for pharmacists to be behind the times. They must be able to compete on the small scale with those firms who make it their business.

Medical men are not to be questioned as to the remedies they prescribe, and few pharmacists would care to acknowledge "they did not make their own pills, but obtained them from a reliable source, and believed them to be of the purest ingredients." And it is desirable that even stock pills should be prepared on the premises. The secret of pill-coating does not appear to be in what the coating consists of, which, in most cases, is powdered French chalk, but in the way it is put on.

The following simple method I have found to give very satisfactory results, and produce pills having an elegant appearance which will bear comparison with those now in the market.

The ingredients are powdered French chalk and thin mucilage of gum arabic—one part mucilage of the Pharmacopœia and two parts

distilled water answers very well. The apparatus used may be found in any pharmacy, namely, a small evaporating basin, having a flat bottom, capacity eight or ten ounces, two covered gallipots, one holding four or six ounces, the other double that size, and a pill-tray.

The pills to be coated should be of good consistence, not too hard, and rolled perfectly round, to ensure their being of good shape when finished. It is well to use French chalk in the place of starch-powder when rolling them out.

Into the small gallipot put some of the chalk, and in the basin put as much mucilage as may be necessary to thoroughly moisten the quantity of pills to be coated (from six to six dozen pills may be done conveniently at one operation). Next put in the pills and shake them round horizontatly until sufficiently moistened, then turn them into the pot containing the chalk, and shake them round so as to get well covered with powder; turn them on the pill-tray and allow to remain a short time, and lastly place them in the empty gallipot and and shake round, so as to polish them and shake off the superfluous powder.

To coat pills by this method occupies about the same time as to silver them, but for stock pills, which may have to be kept for some time, it is better to repeat this process, taking care to have the first coating dry before a second is put on. This will be found to give them a firm pearl-like exterior, which preserves the pills of good shape and consistence, and prevents any change that would be likely to occur through lengthened exposure to the atmosphere.

A few trials will suggest the best way of manipulating, and enable anyone to produce a fair sample of coated pills.

Derby.

Since the above was put into type, we have been favored with a note on pill coating by Mr. John Whitfield, F. C. S., of Scarborough. The details of the manipulation are essentially the same as those described by Mr. Cope; but as the result of experiments in this direction, Mr. Whitfield uses a varnish made as follows:—

Common amber resin, . .	1 to 2 drachms.
Spirits of turpentine, . . .	1 drachm.
Oil of geranium, . . .	20 minims.
Absolute alcohol, ...	To make 1 ounce.

The oil of geranium may be omitted, or substituted by other essential oils at discretion. The pills should be made as hard as possible.

Mr. Whitfield remarks that some pills take the coating at once, others not so readily. In the latter case the powder should be sifted off, and the varnish applied again exactly as at first. A second coat seldom fails, and it increases the bulk of the pills but slightly. He is of the opinion that there can be no objection to the resinous varnish on the ground of insolubility, as he finds when the coated pills are placed, in water the covering cracks and exposes the pill more rapidily than sugar coating.

Pills containing much essential oil are not well adapted for coating. —*Pharm. Journ. and Trans.* [*London*], *May* 30, 1874.

THE DECOMPOSITION OF MILK BY KEEPING.

By Edward Lawrence Cleaver.

Assistant-Demonstrator in the Laboratories of the Pharmaceutical Society.

At a recent prosecution under the Adulteration of Food Act, it was stated in the evidence for the defence that unless milk be analyzed before it is six hours old the results are not reliable, implying that decomposition proceeds at a rate sufficiently rapid to destroy a large portion of the solid matter after that period of time. This is really a most important point, because it is rarely possible to analyze samples within the time above stated; with the object, therefore, of gaining some definite information on this subject, I made a series of experiments, the results of which are stated below.

There are several points which exercise some influence on the decomposition of milk, namely:

1st. *Temperature.*

2d. *Exposure to the atmosphere.*

3d. *The relative poverty or richness of the milk.*

The present note only gives the results of experiments on an average sample of milk at the ordinary temperature; but I hope at some future time to publish a series showing the behavior of different samples under varying conditions. A quantity of milk, purchased early in the morning, was divided into several small portions and placed in bottles which were tightly corked. One portion was analyzed immediately after purchase, and the rest from time to time. The results, taken at a temperature of 70° F., were as under:

No.	Date of analysis.	Total Solids.	Fat.	Ash.
1	April 30th, 1874.	12·48	3·6	·7
2	May 1st, "	12·37	3·6	·7
3	" 2nd, "	12·18	3·6	·7
4	" 4th, "	12·12	3·6	·7
5	" 6th, "	12·09	3·6	·7
6	" 8th, "	12·07	3·6	·7
7	" 12th, "	11·97	3·52	·7
8	" 18th, "	11·97	3·4	·7

It will be seen from these experiments, extending over a period of three weeks, that decomposition does not, in an average sample, proceed at a very rapid rate; and that in an analysis made even after two or three days the error would be inappreciable.

It was suggested to me that if milk which had become sour were neutralized with soda, the volatile acids formed would be retained instead of being volatilized by the heat, and that the solid residue would therefore not suffer loss. On trying this plan, however, no difference was obtained from previous results.

But there is one source of loss to be guarded against when milk becomes very old, and that is the deposition of mineral matter of some kind on the sides of the containing vessel, to which it adheres very firmly; under the microscope it has a distinct crystalline structure, but at present I have not been able to determine the exact nature of the compound.

Varieties.

Oatmeal, Bone and Muscle.—Liebig has shown that oatmeal is almost as nutritious as the very best English beef, and that it is richer than wheaten bread in the elements that go to form bone and muscle. Professor Forbes, of Edinburgh, during some twenty years, measured the breadth and height, and also tested the strength of both the arms and loins of the students in the University—a very numerous class, and of various nationalities, drawn to Edinburgh by the fame of his teaching. He found that, in height, breadth of chest and shoulders, and strength of arms and loins, the Belgians were at the bottom of the list; a little above them, the French; very much higher, the English; and highest of all the Scotch and Scotch-Irish, from Ulster, who, like the natives of Scotland, are fed in their early years with at least one meal a day of good milk and good oatmeal porridge.—*Sanitarian for June.*

Poisoning by the Root of Phytolacca Decandra.—Dr. Rawlings Young, of Corinth, Miss., writes that he was called, on the 21st inst., to three children—nine, six and four years old—poisoned by eating the root of *Phytolacca decandra*. They ate this at 11.30 A. M., at 12 M. took a hearty dinner, and in an hour after commenced purging and vomiting. At 4.30 P. M., when he first saw them, the purging had ceased, but free vomiting occurred at intervals of twenty or thirty minutes; great dilatation of pupils; pulse rapid and very feeble, inspiration short and sighing. When completely aroused from their narcotism they complained of intense epigastric pain, great thirst and chilliness. The treatment consisted of hot baths, sinapisms, small doses of brandy frequently repeated; and they all recovered, though continuing to vomit until 6 A. M. the next day and complaining of vertigo and epigastric tenderness for a day longer.—*American Practitioner, June*, 1874.

On Gurjun Oil in Skin Diseases.—At a late meeting of the Medical Society of London, Professor Erasmus Wilson showed some of this new remedy, and stated that this material, which was also called "wood oil," was an oleo-resin, obtained from several species of the *Dipterocarpus*, an immense tree growing on the Malayan coast of the Bay of Bengal, where it was so common as to be used instead of paint, for houses and ships. About twenty years ago this oil was introduced into England as a substitute for copaiba balsam, and was reported to have the same medicinal properties. Opinion was, however, divided on this point, and the gurjun oil did not succeed in securing a place in the Pharmacopœia. In March, 1873, Dr. Dougall, of the Indian Medical Service, took charge of the convict establishment of the Andaman Islands, when he found twenty-four of the prisoners suffering from leprosy. He was deeply impressed with the misery of these poor people, and realizing the impracticability of availing himself of all known methods of treatment, he hit upon the idea of trying the gurjun oil, both as an internal and external remedy, and determined upon giving it a six months' trial. He closed the experiment in November, by a report, which was kindly placed in Mr. Wilson's hands by Sir Ranald Martin, and used in his lectures before the College of Surgeons. Dr. Dougall's method was to have the patients washed thoroughly in a neighboring stream, using dry earth instead of soap. They were then made to rub themselves for two hours with a liniment composed of gurjun oil and lime-water, one part to three, and to swallow ʒij of the balsam, also combined with lime-water. After this they had their breakfast, and were set to any work they were capable of doing. In the evening the same process was repeated, except the washing. The effects of this treatment, at the end of six months, were marvellous. Neuralgic pains were allayed, sensibility was restored to the anæsthetic skin, tubercles subsided, and ulcers healed. Dr Dougall was astonished at the energy of these formerly helpless ones. Mr. Erasmus Wilson remarked that he had used a liniment composed of equal parts of the gurjun oil and lime-water, in cases of painful eczema, in lupus, and in cancer, with very encouraging results, and stated that Mr. Hancock had applied it in a case of cancer of the skin, with the effect of dispersing tubercles and healing ulcerations; but its

most useful property was that of relieving pain. A lady in constant pain from cancer of the integument who had been unable to sleep, without narcotics, for weeks, was relieved of all suffering, and enabled to sleep, by means of this liniment. Mr. Wilson suggested that this very simple remedy deserved a trial at the hands of the profession, and believed that it would be found a valuable agent of cure in many affections where the skin was painfully attacked.—*Med. and Surgical Reporter, June* 13, 1874.

Jaborandi, a New Medicine.—A new medicine—with marvellous virtues, according to its sponsors—has been introduced and experimented with at the Hospital Beaujon, Paris. An account of the action and characters of the medicine appears in the "Répertoire de Pharmacie" of March 25, from which we condense the following particulars. Dr. S. Continho, of Pernambuco, who claims to have discovered the properties of the plant, induced Prof. Gubler to make a trial of it, and the account given by that eminent physician corresponds exactly with the claims put forth by Dr. Continho.

The leaves and little twigs of the plant are broken up, and from four to six grams infused in a cupful of warm water. The infusion may be taken warm or cold, and in about ten minutes after administration the patient breaks out into a violent perspiration, which continues for four or five hours, and which is so thorough as to necessitate several changes of linen. At the same time a most abundant flow of saliva is promoted, so abundant, says M. Gubler, that speech is rendered almost impossible. He asserts that he has known patients eject *more than a litre* in less than two hours. Occasionally the medicine has induced diarrhœa. Its action is more rapid and more thorough if taken warm, and if the patient is well covered up in bed, but its effects are none the less certain under quite contrary conditions.

MM. Continho and Gubler justly assume that there is a great future for a drug of such capabilities as this *jaborandi* seems to possess. According to Prof. Baillon, the plant belongs to a species of the rue family, the *Pilocarpus pinnatus: jaborandi*, it seems, is the Indian name for the plant. M. Continho slightly shakes our confidence in the miraculous power of his *protegé* when he tells us that it is to be found in the interior of some of the northern provinces of Brazil, an expression which seems to bear a relationship to Dr. Bliss's famous condurango formula, the herb which was only of value when procured "from the almost inaccessible slopes of the Andes." We shall hope for further enlightenment and evidence concerning this energetic diaphoretic.—*Chemist and Druggist* [*Lond.*], *April* 15, 1874.

Emulsion of Raw Meat.—We quote from the "Répertoire de Pharmacie" a formula for the above, which was given by its inventor (M. Yvon) at a meeting of the Société d'Emulation pour la Science Pharmaceutique. The object was to provide an agreeable means of administering raw meat, a remedy much in fashion with some of the Continental physicians. M. Yvon takes

Raw meat,	250 grams.
Sweet almonds,	75 "
Bitter "	5 "
White sugar,	80 "

The almonds are blanched and the whole beaten up in a marble mortar until a rose-colored homogeneous paste is obtained. This is said to be of very pleasant flavor and readily taken by sick persons. It may easily be made into an emulsion with water, which will not unmix for twenty-four hours: the emulsion can be made still more nourishing by the addition of the yolks of two eggs and by being made up with milk instead of with water.—*Ibid.*

Adulterated Honey.—A writer in the Boston "Cultivator" finds that most of the so-called strained honey sold in bottles is composed as follows: Cane or other sugar is melted in a decoction of slippery elm bark in water. Some manufacturers use, instead of elm, a solution of gum arabic and starch, to give it consistency and save sugar; but this last does not resemble honey so much when dropped, as it lacks the stringy appearance. These mixtures, with or without the addition of a little cheap Cuban honey, are flavored with essence, and the mess is ready for sale. The only true way to obtain real honey is to buy it with the comb.—*Scientific American, June* 27, 1874.

Cement for Aquaria.—An adhesive cement for aquaria may be made, according to Klein, by mixing equal parts of flowers of sulphur, pulverized sal ammoniac, and iron filings, with good linseed oil varnish, and then adding enough of pure white lead to form a firm, easily worked mass.—*Ibid., May* 2, 1874.

Pharmaceutical Colleges and Associations.

Charleston, S. C., Pharmaceutical Association.—Some time ago it was proposed to organize a pharmaceutical association for the State of South Carolina; but the committee having the matter in charge failed to obtain a charter from the Legislature, and a permanent organization was not effected. The pharmacists of Charleston now contemplate to form a society, and at a recent meeting a committee (G. J. Luhn, G. W. Aimar, C. F. Panknin, P. Wineman and E. S. Burnham) was appointed to report upon a general plan. The effort, we trust, will prove a success, and be followed by similar earnest attempts in the other States and larger cities in which a union of pharmacists has as yet not been effected.

The State Pharmaceutical Board of Kentucky has been organized as follows: John J. Frost, Lexington, President; Vincent Davis, Louisville, Secretary and Registrar; C. Lewis Diehl, Treasurer and Chairman of Executive Committee, Emil Scheffer, John Colgan of Louisville, J. J. Woods, Maysville, and J. M. Gilson, Paducah.

We are pleased to learn that the registration of pharmacists progresses satisfactorily, and that the law has been so favorably received that its provisions are likely to be extended in a few years so as to embrace the entire State. The prospects for the organization of a State pharmaceutical association appear to be very favorable, and we hope will be stimulated by the next meeting of the American Pharmaceutical Association, which will be held in the City of Louisville in September next.

St. Louis College of Pharmacy.—We rejoice to see the good work of pharmaceutical regulation make such favorable progress. St. Louis has now been added to the number of large cities in which such regulation is attempted. The law, as approved February 2d, gives the above-named college the right to elect a board of pharmacy, consisting of five members, the other provisions of the law being similar to those of the older ones. The first board has been organized as follows: Theo. Kalb, President; Justin Steer, Secretary; Chas. Habicht, Francis X. Crawley and J. M. Good.

St. Clair Pharmaceutical Association of Southern Illinois.—At the regular quarterly meeting, held June 9th, the reception of a set of Proceedings of the American Pharmaceutical Association, from the Executive Committee of this body was announced, and a vote of thanks passed unanimously. The following delegates to the next meeting of the National Association were then appointed: Wm. Feickert, Wm. Kempf, Jr., Chas. Muehlheims and A. G. F. Streit, Ph. D.

Pharmaceutical Society of Great Britain.—At the pharmaceutical meeting held May 6th, Mr. Thos. H. Hills in the chair, Mr. Gostling read a note on adulterated opium; he found in a piece of opium weighing 28 oz. a lump of clayey earth, 2½ oz. in weight, being nearly ten per cent. of the weight of the opium. Afterwards a note, by Mr. E. Smith, on the Additions to the British Pharmacopœia, was read, and a general discussion ensued, during which Mr. Bland very properly remarked that it was much easier to criticise processes described than to suggest new ones which should be unassailable. The meeting subsequently adjourned till next fall.

The thirty-third annual general meeting was held at 17 Bloomsbury square, London, May 20th. A portrait of Mr. T. N. R. Morson was presented, and the annual reports read and discussed. A new Council, to serve for the ensuing year, was elected, and this organized on June 3d, by re-electing the old officers, viz., Thos. H. Hills, President; Alex. Bottle, Vice-President; Mr. Williams, Treasurer; Elias Bremridge, Secretary and Registrar, and Richard Bremridge, his assistant. A deputation, consisting of Messrs. Greenish and Sutton, was appointed to represent the Pharmaceutical Society of Great Britain at the International Pharmaceutical Congress, to be held at St. Petersburg in August next; the sum of £80 was set apart to defray the expenses, and

committee was appointed to confer with the delegation as to the views on the various points of discussion which they should advocate at the Congress.

The British Pharmaceutical Conference will hold its eleventh annual meeting, at the City of London, on August 6th and 7th next.

Pharmaceutical Society of Paris.—Vice-President Planchon presided at the meeting held May 6th. M. Wurtz was added to the Committee at present engaged in preparing the material for an international pharmacopœia.

M. Guichard reported the results of some experiments made by him with sulphide of carbon upon benzoin and other resinous products. The acids obtained from tolu in the preparation of syrup were treated with carbon sulphide, and obtained in large crystals, supposed to be benzoic acid.* Several resins soluble in this menstruum may be conveniently and economically purified by its use; and purified gum resins may be obtained by treating the commercial articles successively with carbon bisulphide and water; resin, gum and a saccharine matter reacting with Fehling's solution, is thereby obtained. It was then stated by several members that the acid of tolu balsam had been recognized by M. Carles† as cinnamic acid, and that a German chemist had previously arrived at the same result.

After some remarks on the probable identity of thapsia and silphion, a report on toxicological researches on phosphorus was presented by M. Lefort.

Editorial Department.

"On Patent Medicines, their Evils and the Remedy" is the title of an essay written by Dr. R. W. Murphy and read before the Sacramento Society for Medical Improvement. The paper, as published in the *Pacific Medical and Surgical Journal* for May, contains some information of general interest; a few of the most important points we desire to lay before our readers.

After referring to the various means resorted to by the manufacturers of quack nostrums to introduce their all-healing combinations, and to the dangerous properties of such preparations, like "Mrs. Winslow's Soothing Syrup," "Vinegar Bitters," and "Ayer's Cherry Pectoral," the author states that a copy of the Patent Medicine Records of the Patent Office would cost about $250. Dr. Thos. C. Smith, of Washington, however, has furnished the following information:

"The first patent granted in the United States, where the use of the medicine is indicated, was on the 3d of May, 1797, to Benjamin Duvall, of Virginia, for anti-bilious pills. The next was June 17th, 1801, to Jesse Wheaton, of Massachusetts, for a jaundice bitters. On the 9th of June, 1809, a patent was granted to Wm. Stoy, of Lebanon Pennsylvania, for a medicine to cure hydrophobia. (What a pity it was a failure!) But the ingredients of these

* They were subsequently proven to be cinnamic acid.

† See American Journal of Pharmacy, 1874, p. 235.

medicines are not given, which places them among nostrums. On the 24th of November, 1820, a patent was granted to Lorenzo Dow (supposed to be the eccentric preacher Dow) for a medicine the recipe of which is now on file in the Patent Office, as follows: 1st. Take nine pounds of Epsom Salts, dissolve in eight quarts of soft, boiling water, to which add tincture of bloodroot four ounces; 2d. Take one pound of salts of nitre, dissolve in boiling water, adding eight ounces of pure sulphuric acid, making four quarts of the solution; when cool mix with No. 1, to be called Dow's Family Medicine. Directions of this mixture: Take from oz. ss. to oz. i, in a half pint of cold water, every two hours until it operates. Remarks: In costive habits a corrective, and in dysentery a speedy relief.

"The recipe is given that you may compare it with the prescriptions of the present day, and to let you see what has been protected by a patent from our Government. In December, 1836, the United States Patent Office, with all its records, was destroyed by fire, which renders it difficult to give anything like a full list of patents granted for medicinal preparations. From 1848 until 1859 but few patents were issued. From 1860 to 1870, 339 were granted."

Since the trade-mark law of 1870 went into operation, most nostrums are held by virtue of a trade-mark; a few figures, which, however, probably do not apply to patent medicines only, will show the importance attached by merchants to this protection.

"Since October, 1864, over 200 trade-marks have been filed with the Secretary of State in California. In 1871–2, 89 trade-marks were filed in the District of Columbia for medicinal preparations. These trade-marks are distinctive labels, or some peculiar device to particularize the products of an individual or firm. There may be found on the revised catalogue of a single house in New York (John F. Henry), for the year 1872, 1,570 different kinds of patent medicines and nostrums." (This includes the patent nostrums.)

Upon what authority the following figures are furnished does not appear:

"There are 14,000 drug stores and 4,000 grocery stores engaged in selling patent medicines in the United States. The number of persons employed in the manufacture and sale of these medicines is 135,000. Over ten million dollars is paid annually for advertising alone, all of which must be paid by the unfortunate consumers. And the amount sold annually in the United States is about eighty million dollars worth, being two dollars for each man, woman and child in our country."

That about two-thirds of the sales of some of the leading (wholesale) druggists are patent medicines is probably correct; but there are others who deal but little in these preparations; and this is also the case with a number of pharmacists, some even not selling any patent medicines.

After pointing out the necessity of protection of the public against the evils resulting from this traffic as at present carried on, the author urges that it is the duty of the medical profession to act in the premises, and, while well weighing the difficulties, he suggests the following plan:

"Our hope of success lies in a concert of action by the medical profession throughout the United States, to secure the enactment of a law requiring the *formula* or *recipe*, printed in plain English, to accompany each and every package of medicine offered for sale in the United States, whether held by virtue of a trade-mark or a patent. Any person or persons who either manufacture or sell such medicines, or cause the same to be done, who fail to comply with the law, or who shall knowingly or wilfully print or cause to be printed a

false formula or recipe to accompany such medicine, with a view of deceiving the public, shall be deemed guilty of a misdemeanor, and liable to be punished by fine and imprisonment, and to have all the medicines confiscated.

"To accomplish the proposed legislation, the National Medical Association should secure the co-operation of all the State Societies in getting petitions to Congress on the subject, which petitions should not only contain the names of all the physicians in the United States, but also the names of all the State officers in each State. The petitions should all be sent up at the same time, and be presented by a committee appointed by the National Medical Association.

"The object of the law is not to wipe from existence everything in the shape of patent medicines, but to correct the evil, if possible, and protect the innocent and unsuspecting from being imposed upon."

It will be observed that this plan is essentially the same as the one proposed on page 90 of our February number, to which we would refer the reader for some further observations.

The Enforcement of Pharmaceutical Laws, it appears to us, is not always as strict as it might be. It is possible that in Philadelphia nearly all legally required to do so may have been registered, but there appear to be, in some localities, such flagrant violations of the law that pharmacists should consider it their duty to furnish sufficient evidence to the Pharmaceutical Board to warrant them in proceeding against the violators. The following letter, received from Mr. W. R. Jones, explains itself:

"The so-called law, termed 'An Act to Regulate the Practice of Pharmacy,' is apparently a dead letter so far as any enforcement of the law is concerned, while *all law-abiding* members of the craft have appeared for examination, or to pay for and take out the required certificate, others have neglected and refused to do so; not the least in number and importance are the grocers, who sell with impunity, and with a full notification, from the board, of the requirements of the law, daily violate the law, with no one to punish or prevent. In justice to those paying the fee, they should either be protected by the enforcement of the law, or the fee refunded. I, for one, will contribute towards a fund to bring a case to trial."

Pills of Sulphate of Quinia.—In relation to the note on this subject, published on page, 112 of our March number, Mr. A. Schreiber, of Tell City, Ind., informs us that a smaller quinia pill can be made by using a mixture of equal parts of glycerin and muriatic acid, than with the glycerin alone; Mr. S. has used such a mixture for this purpose for several years.

The Stamp Tax.—We have heretofore endeavored to keep our readers informed upon the action taken by various bodies with the view of securing the repeal or modification of section 13 of the Internal Revenue Law, which had become burdensome and vexatious in consequence of a decision, dated September 9, 1873, by Commissioner Douglas. For various reasons, a repeal of the section could not be obtained, and the efforts of the Committees were then directed towards obtaining such a modification or explanation of its phraseology

and meaning as to do away with the possibility of conflicting and vexatious decisions by revenue officers. A section clearly defining which medicines are *not* stampable, was attached to bill No. 3,571 of the House of Representatives, by which body it was passed June 2d. The Senate failing to agree with all the provisions of this bill, a Conference Committee was appointed by both Houses of Congress. The report of this Committee has been postponed until next December.

The section in question reads as follows:

"Section 22. That hereafter nothing contained in the Internal Revenue Laws shall be construed so as to authorize the imposition of any stamp tax upon any medicinal articles prepared by any manufacturing chemist, pharmaceutist, or druggist, in accordance with a formula published in any standard dispensatory or pharmacopœia in common use by physicians and apothecaries, or in any pharmaceutical journal issued by any incorporated college of pharmacy, when such formula and where found shall be distinctly referred to in the printed label attached to such article, and no proprietary interest therein is claimed. Neither shall any stamp be required when the formula of any medical preparation shall be printed on the label attached to such article, where no proprietorship in such preparation shall be claimed."

A circular of the Philadelphia Drug Exchange, after giving the information of the postponement of the report, continues as follows:

"Nevertheless, as this section was one which met the full approval of both the Senate and House of Representatives, there is no doubt of its final passage; and it is reasonable to suppose that the Commissioner of Internal Revenue—in view of the sentiment of these bodies—will continue to withhold the enforcement of his ruling, of October last, until the final disposition of the question by Congress."

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Materia Medica for the Use of Students. By John B. Biddle, M.D., Professor of Materia Medica and General Therapeutics in the Jefferson Medical College, &c. Sixth edition, revised and enlarged, with illustrations. Philadelphia: Lindsay & Blakiston, 1874. 8vo, pp. 435. Price, $4.

That this work is a valuable aid to the medical student is proven by the rapid exhaustion of the previous editions; the present one follows the new Pharmacopœia of the U. S. in nomenclature, and the so-called new chemical notation has been introduced throughout. As far as we have examined the formulas, they are given correctly; this is also the case for propylamia (spelled by the author prophylamia), which, however, is not the alkaloid of herring pickle, this being trimethylamia, of the same *elementary* composition as the former. The therapeutical portion of the work has in many cases been re-written, and appears to contain all the most notable facts having become known up to the time of publication. This is also the case with the other portions, the most important omission noticed by us being Scheffer's process for pepsin, and the

similar one for pancreatin proposed by Mattison. An erroneous statement is made on page 298, where it is said that "benzoin is volatile."

The descriptions of the drugs are of the same character as found in nearly all works on materia medica written for the exclusive use of the physician or medical student: they are insufficient for the diagnosis of the crude drugs, which, however, is not an essential branch of knowledge of the medical practitioner.

Compared with former editions, the one before us has been greatly improved, and will be found of at least equal usefulness to the American medical student as the former ones. The publishers have made the book quite attractive in appearance.

A Conspectus of the Medical Sciences; comprising manuals of anatomy, physiology, chemistry, materia medica, practice of medicine, surgery and obstetrics, for the use of students. By Henry Hartshorne, M.D., Professor of Hygiene in the University of Pennsylvania. Second edition, enlarged and thoroughly revised, with 477 illustrations. Philadelphia: Henry C. Lea, 1874. 12mo, pp. 1024.

The work is intended as an aid to the medical student, and as such appears to admirably fulfil its object by its excellent arrangement, the full compilation of facts, the perspicuity and terseness of language, and the clear and instructive illustrations in some parts of the work. We notice an oversight on page 529, where *Russian* rhubarb is still mentioned as one of the varieties of rhubarb, while for a number of years past the Russian government has not had any to dispose of, and for fully a decade this kind has enjoyed a mere historical interest, and is found only in cabinets, but not in the general market.

Geo. P. Rowell & Co.'s American Newspaper Directory; containing accurate lists of all the newspapers and periodicals published in the United States and Territories, and the Dominion of Canada and British Colonies of North America. New York: Geo. P. Rowell & Co, 1874. 8vo, pp. 896.

We have on former occasions called attention to the usefulness of this annual publication. The present handsome volume shows an increase of 493 periodical publications over the number exhibited in 1873, the whole number now being 7,784.

The Mutual Relations of Druggists and Physicians. By Chas. E. Buckingham, M. D., Professor of Midwifery in the Medical Department of Harvard University. Boston: 1874. 8vo, pp. 15.

This is an able address, delivered before the graduating class of the Massachusetts College of Pharmacy at the commencement held April 22, and reprinted from the "Boston Medical and Surgical Journal."

Transactions of the Fourth Annual Session of the Medical Society of Virginia, held in Norfolk, November, 1873. Richmond: Fergusson & Rady, printers, 1874. 8vo, pp. 124.

The receipt of this pamphlet is hereby acknowledged.